*Acta Alimentaria, Vol. 29 (1), pp. 59–70 (2000)*

# SCREENING OF DIFFERENT *KLUYVEROMYCES* STRAINS FOR SIMULTANEOUS SACCHARIFICATION AND FERMENTATION

M. BOLLÓK and K. RÉCZEY

Department of Agricultural Chemical Technology, Technical University of Budapest,
H-1521 Budapest, Szt. Gellért tér 4. Hungary

(Received: 25 May 1999; accepted: 8 September 1999)

It is of big importance to find a thermotolerant yeast strain with a high tolerance against inhibitors present in steam-pretreated wood, which can be used in simultaneous saccharification and fermentation (SSF) process for bioethanol production from wood.

Five thermotolerant yeast strains belonging to the genera *Kluyveromyces marxianus* (3) and *Kluyveromyces thermotolerans* (2) were studied by growing them on agar slants and in shake flasks at different temperatures using glucose medium. The yeasts were grown in the presence of the liquid of steam-pretreated softwood as well to test the tolerance of yeasts against inhibitors formed during the pretreatment of wood. The investigated yeasts proved to be sensitive to inhibitors at high temperatures. *K. marxianus Y.00243* showed less sensitivity to inhibitors at 37 °C, *K. marxianus Y.01070* was the most thermotolerant on glucose medium, but it was too sensitive to inhibitors.

**Keywords:** *Kluyveromyces marxianus, Kluyveromyces thermotolerans*, steam-pretreated softwood

Use of renewable energy sources for ethanol production receives a considerable attention in researches. Bioethanol has an increasing importance as a transportation fuel and octane booster (HIMMEL et al., 1997). Among the technologies which trend to produce bioethanol from lignocellulosic materials, simultaneous saccharification and fermentation (SSF) is a well-studied, enhanced significant process. This technology is in possession of several advantages, nevertheless some drawbacks are to be solved to increase the efficiency of bioethanol production. One of the emerged problems which is associated with the SSF is the difference in optimum temperature for saccharification and fermentation which are performed simultaneously in this technology (GROHMANN, 1993). In consequence of higher temperature requirement for saccharification, there are endeavours to use thermotolerant yeasts in the SSF.

Due to economic consideration, as a significant part of total cost is the cost of raw material (VON SIVERS et al., 1994), there are increased efforts to use renewable, inexpensive lignocellulosic substrates for ethanol production. In enzymatic process, the